

1 What is claimed is:

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3 1. A sensor for sensing the presence of a chemical vapor, the
4 sensor adapted for interconnecting to an electrical monitor for
5 measuring a reaction of the sensor to the chemical vapor, the
6 sensor comprising,

7 a positive terminal, the positive terminal being conductive,

8 a negative terminal, the negative terminal being conductive,

9 the terminals adapted for interconnection to the electrical
10 monitor, and

11 a film of organic conductive polymer nanofibers extending
12 between the positive and negative terminal for producing a
13 change in conductivity between the positive terminal and the
14 negative terminal as monitored by the electrical monitor when
15 the film is exposed to the chemical vapor.

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17 2. The sensor of claim 1 wherein,

18 the positive terminal and the negative terminal are made of
19 gold.

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22 3. The sensor of claim 1 wherein the positive terminal and the
23 negative terminal are made of gold and the conducting polymer
24 is polyaniline, the sensor further comprising,

25 a thiol surface layer disposed between the terminals and the
26 film.

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1 4. The sensor of claim 1 wherein,

2 the polymer nanofibers are selected from the group
3 consisting of polyaniline nanofibers, polypyrrole nanofib rs,
4 polythiophene nanofibers, polytoluidine nanofibers,
5 polyanisidine nanofibers, polymethylaniline nanofibers,
6 polyethylaniline nanofibers, poly2-alkoxyanilines nanofibers
7 and poly2,5-dialkoxyanilines nanofibers.

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9 5. The sensor of claim 1 wherein,

10 the polymer nanofibers are polyaniline nanofibers, and
11 the chemical vapor is selected from the group consisting of
12 an acid vapor and a basic vapor.

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14 6. The sensor of claim 1 wherein,

15 the polymer nanofibers have diameters less than 500 nm and
16 lengths less than 10 μ m.

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18 7. The sensor of claim 1 wherein,

19 the polymer nanofibers are polyaniline nanofibers having
20 diameters less than 500 nm and lengths less than 10 μ m.

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22 8. The sensor of claim 1 wherein,

23 the polymer nanofibers are polyaniline nanofibers having
24 distributed diameters of 50 nm.

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26 9. The sensor of claim 1 wherein,

27 the polymer nanofibers are polyaniline nanofibers having
28 distributed diameters of 30 nm.

1 10. The sensor of claim 1 wherein,
2 the polymer nanofibers are polyanilin nanofibers having
3 distributed diameters of 120 nm.

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